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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/627,714	07/28/2003	Reuven Unger	P23589	7104
7055	7590	09/29/2004		
GREENBLUM & BERNSTEIN, P.L.C. 1950 ROLAND CLARKE PLACE RESTON, VA 20191			EXAMINER	
			LEUNG, RICHARD L	
			ART UNIT	PAPER NUMBER
			3744	

DATE MAILED: 09/29/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No.	Applicant(s)
	10/627,714	UNGER ET AL.
Examiner	Art Unit	
Richard L. Leung	3744	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM

#### THE MAILING DATE OF THIS COMMUNICATION.

Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.

- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

1) Responsive to communication(s) filed on 28 July 2003.  
 2a) This action is FINAL. 2b) This action is non-final.  
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

4) Claim(s) 1-19 is/are pending in the application.  
 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
 5) Claim(s) \_\_\_\_\_ is/are allowed.  
 6) Claim(s) 1-19 is/are rejected.  
 7) Claim(s) \_\_\_\_\_ is/are objected to.  
 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

9) The specification is objected to by the Examiner.  
 10) The drawing(s) filed on 28 July 2003 is/are: a) accepted or b) objected to by the Examiner. Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a). Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
 a) All b) Some \* c) None of:  
 1. Certified copies of the priority documents have been received.  
 2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

1) Notice of References Cited (PTO-892)  
 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)  
 3) Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
 Paper No(s)/Mail Date \_\_\_\_\_.

4) Interview Summary (PTO-413)  
 Paper No(s)/Mail Date. \_\_\_\_\_.  
 5) Notice of Informal Patent Application (PTO-152)  
 6) Other: \_\_\_\_\_.

## DETAILED ACTION

### ***Oath/Declaration***

1. The oath or declaration is defective. A new oath or declaration in compliance with 37 CFR 1.67(a) identifying this application by application number and filing date is required. See MPEP §§ 602.01 and 602.02.

The oath or declaration is defective because:

The specification to which the oath or declaration is directed has not been adequately identified. The second partially executed Declaration and Power of Attorney entered on December 19, 2003 fails to properly identify the specification by the correct title.

### ***Drawings***

2. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description: 11.
3. Figures 1-3 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g).
4. Corrected drawing sheets in compliance with 37 CFR 1.121(d), or amendment to the specification to add the reference character(s) in the description in compliance with 37 CFR 1.121(b) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified.

and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

***Specification***

5. The incorporation of essential material in the specification by reference to a foreign application or patent, or to a publication is improper. Applicant is required to amend the disclosure to include the material incorporated by reference. The amendment must be accompanied by an affidavit or declaration executed by the applicant, or a practitioner representing the applicant, stating that the amendatory material consists of the same material incorporated by reference in the referencing application. See *In re Hawkins*, 486 F.2d 569, 179 USPQ 157 (CCPA 1973); *In re Hawkins*, 486 F.2d 579, 179 USPQ 163 (CCPA 1973); and *In re Hawkins*, 486 F.2d 577, 179 USPQ 167 (CCPA 1973).

***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 1-4, 7-11, and 14-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over admitted prior art (Admission) in view of JP 10-15661.

Regarding claims 1-4, 7-11, and 15-17, Admission discloses a reciprocating device, a conventional Stirling cycle refrigerator (Specification, Figs. 1-3) comprising a sealing container 10, a cylinder 20 provided inside the sealing container and filled with

Art Unit: 3744

coolant gas, a cold finger tube 14 provided at one end of the sealing container 10, a displacer cylinder 30 provided within the cold finger tube, a displacer 32 configured to divide an inside of the displacer cylinder 30 into an expansion space 30b and a compression space 30a, a piston 22 configured to move together with the displacer within the cylinder, the piston and displacer configured to compress and expand the coolant gas, a linear motor unit 50 configured to drive the piston, a regenerator 40 configured to store and radiate thermal energy after absorbing thermal energy from the coolant gas, and an internal heat transfer member 17 connecting the cold finger tube 14 and the sealing container 10, as is already known in the art. Admission further discloses that said internal heat transfer member 17 is mounted inside of a transition member 16 with an external heat transfer member 18 mounted outside of said transition member 16, the external heat transfer member comprising a base 181 and an insertion member 16, the external heat transfer member comprising a base 181 and an insertion groove (Fig. 3) configured to accept an adaptor 19 inserted therein. Admission fails to expressly disclose the inclusion of a base blocking protrusion or a groove blocking protrusion. Specifically, Admission fails to expressly disclose that said base comprises a base blocking protrusion radially extending from the base and configured to contact the transition member, said base blocking protrusion spaced axially inwardly from one end of the base and creates an axially extending channel between the transition member and the base, the channel configured to accept a brazing material therein. And Admission also fails to expressly disclose that said base comprises a groove blocking protrusion axially extending from a circumferential surface of the insertion groove and spaced axially inwardly from one end of the base and configured to contact the adaptor

Art Unit: 3744

and create an axially extending channel between the adaptor and the base, the channel configured to accept a brazing material therein. JP 10-15661 (see DERWENT English abstract) teaches a method for the joining of pipes wherein one of the pipe members 4 is provided with blocking protrusions (projections) 5 spaced axially inwardly from one end of the pipe 4 and extending radially from the circumferential surface of the pipe 4 such that an axially extending channel 6 is formed between the members to be joined for accepting a brazing material 30 therein. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have included in the reciprocating device disclosed by Admission the blocking protrusion taught by JP 10-15661 between the base of the heat transfer member and the transition member and/or between the insertion groove and adaptor as required by the claims, because the addition of the protrusions facilitates the formation of a more secure joint and prevents the brazing material from flowing out.

Regarding claim 14, it is not expressly disclosed by the combination of the Admission and JP 10-15661 that said groove blocking protrusion has a flat upper surface and smooth end surface. At the time the invention was made, it would have been an obvious matter of design choice to a person of ordinary skill in the art to have made the groove blocking protrusion in the combination of the Admission and JP 10-15661 to have a flat upper surface and smooth end surface because Applicant has not disclosed that having a flat upper surface and smooth end surface on the groove blocking protrusion provides an advantage, is used for a particular purpose, or solves a stated problem. One of ordinary skill in the art, furthermore, would have expected

Art Unit: 3744

Applicant's invention to perform equally well with the protrusions taught by JP 10-15661 because both protrusions perform the same function of controlling the brazing material at the joint.

8. Claims 5, 12, and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's admitted prior art (Admission) in view of JP 10-15661 as applied to claims 1, 10, and 15 above, and further in view of US 5333918 (Crout et al.). The combination of the Admission and JP 10-15661, as discussed above, demonstrates all the limitations of the claims, except for including a stepped portion on the inner circumferential surface of the base that makes contact with the transition member, a surface of the stepped portion configured to accept a brazing material thereon. Crout et al. teach a brazed tubing fitting assembly wherein a tube 5 is joined to a fitting 4 provided with a stepped portion (counter sunk groove) 2 in which brazing material 14 is inset (column 2, line 44 to column 3, line 2). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have included in the combination of the Admission and JP 10-15661 the stepped portion taught by Crout et al. on the inner circumferential surface of the base that makes contact with the transition member as required by the claims, because Crout et al. demonstrates that such a stepped portion provides for a strong braze joint by controlling the flow of molten braze material.

9. Claims 6, 13, and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's admitted prior art (Admission) in view of JP 10-15661 as applied to claims 1, 7, and 15 above, and further in view of US 6732905 B2 (Humpston et al.).

Art Unit: 3744

Admission discloses an air pocket 18a on an area inside of the base 181 located between external heat transfer member 18 and transition member 16 (Fig. 3), and the combination of the Admission and JP 10-15661, as discussed above, demonstrates all the limitations of the claims, except for providing a vent hole configured to connect the air pocket to an area outside the base, or that the vent hole is configured such that air inside the air pocket is discharged during a brazing process. Humpston et al. teach a joint formed by soldering or brazing (column 2, line 40-41), wherein a pocket (cavity) 240 is provided with a vent hole 250 or 255 such that gas may escape from the cavity through vent hole 250 or 255 during the brazing process. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have provided the air pocket in the combination of the Admission and JP 10-15661 with a vent hole to connect the air pocket with an area outside the base such that air may be discharged during brazing as taught by Humpston et al. because such a vent hole provides a means for gas to escape without having to bubble through the brazing material and create voids in the joint.

### ***Conclusion***

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

US 2488229 (Noojin): discloses a joint for tubes comprising fitting a first annular piece into a defined groove in a second piece, each member having protrusions (threading) on the surface of contact.

US 4565383 (Isaac): discloses that it is common practice to use vent holes to vent gases during the brazing of tubes.

Art Unit: 3744

US 4887853 (Flowers et al.): discloses a method for brazing tubular sections comprising placing the brazing material in a defined stepped portion.

US 5039896 (Adams et al.): discloses the use of a vent hole to releases gases produced in a brazing process to join separate parts.

US 6161389 (Sekiya et al.): discloses reciprocating Stirling machine with a finned heat transfer member.

US 6327862 B1 (Hanes): discloses a reciprocating device, Stirling cycle refrigerator, with heat transfer member.

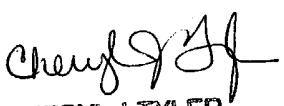
US 6631740 B1 (Jackson et al.): discloses a specialized brazing joint for tubes and similar structures comprising grooves wherein the brazing material may flow.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Richard L. Leung whose telephone number is 703-306-4154. The examiner can normally be reached on Mon-Fri.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Denise L. Esquivel can be reached on 703-308-2597. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Richard L. Leung  
Examiner  
Art Unit 3744

  
CHERYL J. TYLER  
PRIMARY EXAMINER

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